

## THE MICRO-MOTOSCOPE.

IT SHOWS THE WIGGLINGS OF YOUR  
BLOOD CORPUSCLES.ONE OF THE MODERN SYSTEMS OF DIAGNOSIS  
—RECENT ADVANCES IN THE ART OF  
PHOTOGRAPHING LIVING MICRO-  
SCOPIC OBJECTS.

It not infrequently happens that when an improvement has been effected in some particular scientific operation the public is not familiar enough with the process itself to appreciate the innovation, so rapid are the steps, small though they be, by which most branches of knowledge and arts are being advanced. It would not be surprising, therefore, if some of the best-informed readers of The Tribune, if told that Dr. Robert L. Watkins, of this city, had just developed something new in micro-photography, should ask what micro-photography is, and what the medical profession have to do with it. A brief reply to such interrogation would enable one the better to understand the latest phase of the subject.

Physicians have for years been relying upon a microscopic examination of the blood for valuable indications of a patient's condition. A very small fraction of a drop, pressed flat between two bits of glass, is placed under the microscope, and reveals many secrets to the eye. The expert looks for foreign matter, like evidence of tuberculosis, for crystals, for bacilli and other things that ought not to be found in the veins of a healthy person. He then examines the tiny red and white discs, called corpuscles, which constitute a part of the blood. These are so small that 3,500 of them, placed edge to edge in a row, would make a line only an inch long; that is, if they were the red ones. The white corpuscles, which are far less numerous, are a trifle larger. But with a magnifying power of 700, 1,000 or 1,500 diameters it is possible to detect many strange and instructive things.

## WHAT BLOOD CORPUSCLES TELL.

One can discover, for instance, a certain indentation of the edge, which betrays fatigue. Or there may be adherent granules, which signify something else. Perhaps the microscopist will perceive disease germs (like those of malaria) snugly ensconced inside of the corpuscle. If the blood cell exhibits a flabby texture, still another interpretation is placed on the fact. One of the most important features of a specimen is the arrangement of the corpuscles. In a healthy person these should show a proper spirit of independence, no matter how close the actual contact; but in the blood of a tuberculous patient they form little clusters. This tendency to stick together in separate groups means a great deal to a practised student.

It is said that such a scrutiny of the blood as this will afford indications of at least fifty different maladies, the list including three or four varieties of malaria, a larger number of types of rheumatism and several kinds of consumption. Indeed, the last-named disease can now be detected by a microscopic examination of the blood long before a patient begins to cough.

But a physician cannot put into his notebook all that he sees in his microscope. A photograph of a specimen, therefore, properly numbered and stored away, is a valuable record in connection with a case, long after the immediate need for the test has passed. Specialists in this department of investigation, therefore, have combined a camera with the microscope in such a way that they can secure permanent pictures of this sort. The image which would otherwise make only a transient impression on the human retina is projected into the camera. As it is desirable to have the slide on which the blood lies remain in a horizontal position, the picture can best be seen from above. Hence the camera is arranged to point downward, although in certain other classes of work its axis is horizontal. A picture obtained in this way is called a micro-photograph.

Thus far no mention has been made of the movements of the corpuscle while under examination. For several hours after being taken from the patients' veins the blood cells will behave in a curious manner. The red ones shift their position slowly and very slightly. But the white corpuscles, or leucocytes, also show changes of form, as if they were endowed with life. They twist about into irregular shapes, very unlike the perfect disc of their dark-complexioned neighbors; and delicate fibres or feelers are extended, as if in search of prey. The resemblance between these movements and those of an amoeba, a microscopic organism often found in fresh water, is striking. But after an interval of time, rarely exceeding a day, the leucocyte ceases to wiggle, and is then considered to be dead.

## THE WHITE CORPUSCLES' ACTIVITY.

This activity of the white corpuscles of the blood is more than curious. It is important. A great deal more may be learned on the subject, perhaps, than is known now. But already these movements signify something to a limited number of experts. An abnormal liveliness may be due merely to excessive warmth; but it may also be due to tuberculous conditions. It might happen, for instance, that a patient exhibited symptoms which suggested both typhoid fever and consumption. The attending physician would be puzzled to say which the person was threatened with. An appeal to an expert in microscopic analysis, at this juncture, might settle the question instantly, and save valuable time in the adoption of a course of treatment.

Here, however, the medical profession is on

the edge of a large and imperfectly explored field. Both as demonstrations of what has been observed in the past and for purposes of future investigation, it is desirable to secure records of the amoeboid movements of the white corpuscle, and of other changes occurring in the blood immediately after a sample is taken. Dr. Watkins, to whom reference has been made in this article, and who was intrusted with the microscopic examinations at the Post Graduate Hospital for a considerable period of time some years ago, is an adept in micro-photography, as well as an enthusiastic advocate of this system of diagnosis. For many months he has been seeking a way to represent to other people, on a screen, living microscopic objects. At last he experimented with the vitascope, and with gratifying success. In a recent number of "The Medical News" (New-York) he told the profession something about it.

Hitherto it has been possible to make a few pictures, at intervals of from two to fifteen minutes, of the same specimen, and to exhibit prints or lantern slides of these separately. But by using the film and special apparatus of a kinetoscope he is able to obtain pictures at the rate of twenty-five hundred or five thousand per minute (forty to eighty a second), and to throw them on a screen with equal or greater velocity. On strips of sensitized celluloid, from fifty to one hundred and fifty feet in length, he gets pictures seven-eighths of an inch high, and running over a dozen to the foot. These faithfully reproduce all the activities of minute living creatures found in water, as well as those of the blood cells, when employed as similar strips are in the vitascopes, mutascopes and cinematographs now in service at public places of entertainment. In his contribution to "The Medical News" Dr. Watkins says:

"The accurate reproduction of these various vital processes of cell life will be of great assistance in revealing the exact condition of the blood, and help us to get one step nearer the ultimate processes of life. From what I have seen, I do not hesitate to say that various cells now known by different names will be found to be only transition forms of the leucocyte."

Dr. Watkins calls his apparatus the "micro-motoscope."

## JUSTICE HARLAN'S GOLF INJUNCTION.

HE DEVELOPED INTO AN EXPERT, TRYING TO  
GET INFORMATION, AND IT MAY NEVER  
BE ISSUED.

From The Chicago Times-Herald.

Justice John M. Harlan, of the United States Supreme Court, is about to be engaged in an international controversy which is worrying his son, Alderman John M. Harlan. If legal questions were involved, Alderman Harlan would not lose any sleep. He knows his father is a match for any jurist in any other country. It is not even a question of bringing into prominence the suaver in modo shaken up with fortiter in re. Justice Harlan can take care of himself in such matters. The law is flexible sometimes, and, besides, the Justice could issue an injunction if he thought he was going to get the worst of it. But the regulations by which he has to rule his course in the coming international fight are as unchangeable as the laws of the Medes and Persians.

Justice Harlan left the bench some weeks ago to enjoy a quiet vacation in Canada. He went to Lorne House, Murray Bay, in the Province of Quebec. He is there yet. It is within sight of the hotel that the international contest is to take place. He says he is not going to quit until he wins. And Alderman Harlan, who is past master in the contests into which Justice Harlan has flung himself like an ancient gladiator, is hoping that victory will perch on the brassie of his father.

Justice Harlan is involved in an international golf game. He went to Canada with a poor idea of golf, although his son, Alderman Harlan, is a devotee of the game. Justice Harlan could not see any fun in hitting a ball, chasing it over the prairie and then trying to foolie it so that it would plump into a little hole in the ground. He had a nice quiet time at the hotel gazing at the scenery. Then he met the golf widows. Now, these golf widows were the wives of men who had taken them to Lorne House and had been as nice as nice could be until they fell under the spell of golf. Then the husbands died. Their entire nature changed. Their conversation changed. Their poor, neglected wives could not understand why there should be such a fuss because two strokes had to be sacrificed at a bunker. They appealed to Justice Harlan to issue an injunction restraining their husbands from playing golf. The Judge sympathized with them and determined to take steps in the matter.

Of course, Justice Harlan had to learn the facts in the case. So he strolled over to the links one day. He did not get to the hotel for dinner until 9 o'clock that evening. It is said he told the golf widows he was seeking for reliable information on which an injunction writ could lie. He went the next day to the links. He went again. The golf widows became interested and followed him. They began to learn the game and, with the Judge, forgot all about the injunction.

Justice Harlan developed into an expert. At least, that was what the Scotchman in charge of the links told him. The Judge met friends and made friends. Then in a fit of enthusiasm he made up a match game with a prominent Canadian jurist. The game is to be played in a few days. Those who have noted the fierce enthusiasm of Justice Harlan say it will be a game to the finish. And Alderman Harlan is hoping that the result will prove that golf is the king of games.

## THE FRENCH ON THE ALPINE FRONTIER.

From Public Opinion.

The recent visit of President Faure to the Alpine frontier, in order to witness the evolutions of the forces there, continues to draw attention to a very interesting branch of the French Army. The Alpine operations have just led to an incident which has caused some agitation in Italy. Three French shells, it appears, burst on the Italian side of the frontier, in the neighborhood of Fort Pattacrouze. The "Tribuna" asserts that this was done by intention, with the purpose of trying the range of the guns, and of seeing if their shells could reach the Italian fort. The

"Tribuna" seizes the occasion to say that the Italian fortifications defending the plateau of Mont Cenis are badly placed, being dominated by the positions of Beccia and Nunda. The "France Militaire" points out that the unfortunate bursting of these shells was clearly through accident, since the mountains are often clothed in mist, and the positions cannot always be discerned.

## HER BIG RECORD SAVED.

ONE WAY TO GET HARD WORK DONE ON  
A CYCLOMETER.

The man who invents something new in the way of a time-killer at a summer resort is looked upon as a hero. Mount McGregor had a heroine of that kind this season in the person of a young woman who told the following story:

"The Hotel Balmoral, the cottage where General Grant died, the music and the usual attractions failed to impress us favorably one day while we were in the mountains. A heavy mist shut out the panorama of the valley and the encircling mountains, and we were all showing symptoms of summer-resort blues, when an accident saved the day. One of our party had been to Wilton on her wheel, and on the return trip met with a stump and a fall, which

## A VARIETY OF PLAYS.

SOL SMITH RUSSELL AT THE GARDEN.

LILLIPUTIAN AND CHINESE DRAMA—FRANCE

WILSON'S RETURN—A BALLET DANCER FROM  
FRANCE AND A BALLET FROM ENGLAND.

The appearance of Sol Smith Russell at the Garden Theatre this week will doubtless prove one of the pleasant incidents of the early theatrical season. Mr. Russell's impersonations are always enjoyed, and he has now been absent from New-York for some time. He brings with him this time a play by Miss Martha Morton, entitled "A Bachelor's Romance." It has been played more or less out of town in the last year, but it is new to this city.

The theme of "A Bachelor's Romance" is by no means a new one on the stage. It is the story of a man at middle age, or past it, who loves a young woman and gives her up, for the sake of her own happiness, to the young man whom she loves, or is supposed to love. In the present case the self-sacrificing man whom Mr. Russell impersonates is the editor of a paper which has offered a prize of \$10,000 for a story,



SOL SMITH RUSSELL IN "A BACHELOR'S ROMANCE," AT THE GARDEN THEATRE

resulted in nothing more serious than a broken cyclometer.

"I can get another for 80 cents," she said, "but this one showed how much I had wheeled since I left home, and it is just too mean for anything."

"There was a new cyclometer in the house, and I determined that our broken-hearted friend should have it, and that it should bear the evidence of her 1,467 miles. Did you ever try to wind off a mile on one of the little instruments? If not, you cannot appreciate the undertaking. The girls saw me wind, and asked what it was all about. Then I did the trick."

"The game is to see how many miles you can wind in five minutes," said I, and then everybody wanted to try. The cyclometer passed from hand to hand—bets were made, discussions arose, and when the train came up from Saratoga the men forgot to tell their wives how much they had won on the races, and the women neglected to mention the latest bit of hotel gossip, so intent were all to make the best record.

"We who were in the plot sat by and encouraged the contestants, and realized how easy it is to make others do your work if you only go about it in the proper way."

## A KITE USED TO HAUL A BOAT.

St. Paul correspondence of The Chicago Times-Herald.

Rukard Hurd, of St. Paul, has a number of box kites, and Sunday morning he brought three of the largest ones to Frontenac for the purpose of flying them. He conceived the idea of making use of the kites as a motive power for boats and tried the experiment.

With a companion, Edward Honek, of Frontenac, he attached the largest of the kites to a rowboat on Lake Pepin at Lakeside Hotel Point and made the trip to the Lake City point in less than one hour, covering a distance of nearly eight miles. The kite as it glided over the water had the appearance of an air ship.

The kite measured 36x18 inches, and was an exact imitation of the box kites used by the observatory near Boston for the purpose of making barometrical and thermometrical experiments.

and he is to be the judge and the awardee of the prize. Twenty years ago the editor was disinherited by his father for persisting in a literary career and refusing to enter the father's business.

Now that the time has come for the awarding of the prize, the editor finds that the author who really ought to receive it is a rival suitor for the girl whom the editor loves. The young man is poor, and he looks to the prize which he hopes to win as the means which is to enable him to marry and, presumably, to be happy. The editor has it in his power to give the prize to somebody else and overthrow the plan, clearing the way for his own suit. He sacrifices himself and gives the young man the \$10,000 and the bride.

It will be observed that there is not enough originality in this story to carry it far. All must depend upon the treatment which it has received at the hands of the dramatist and that which it gets from Mr. Russell and his fellow-actors. The character appears to be adapted to Mr. Russell's personality and artistic resources, and it seems reasonable to look for an excellent result.

The eminent suburban strategist and military engineer, Francis Wilson, will present himself to the New-York public again this week at the Broadway Theatre. There his facial comicality and his agility of limb will be appreciated, he will be at peace among admirers and friends, and he will be safe from that ingratitude which besets those who attempt great works in their own towns. Mr. Wilson will again be seen and heard in "Half a King," which he presented at the Knickerbocker Theatre a year ago. The prosperity of this operetta through last season was sufficient, to his mind, to warrant him in continuing it for the present. His supporting company is still headed by Miss Lulu Glaser.

The entertainment given by the Lilliputians is a thing by itself. All the plays in which they have appeared in the seven or eight years they have been known in America have belonged to